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ABSTRACT

Data obtained from 22 surveys conducted from 1974 through 1981 in Louisville, Kentucky, were used in a study that explored the agenda setting hypothesis, which states that heightened coverage of issues by the media causes increased perceptions of that issue as salient among the public. The research addressed (1) the extent to which both issue saliences and attitudes over time are related to media content, (2) the extent to which the environmental context influences issue saliences and attitudes in relationship to media coverage, and (3) the nature of the causal relationship among media coverage, issue saliences, attitudes, and contextual variables. Media coverage of community issues was taken from the "Louisville Times" during the eight-year period. The results showed strong interrelationships among media coverage, context, saliences, and evaluation variables for seven prominent community issues: economic development, education, the environment, crime, local government, public recreation, and health care. The regression and canonical correlation analyses suggested that a reciprocal or cyclical influence occurred over time for the media coverage and context variables, on the one hand, and saliences and evaluations on the other. The final regression models for each issue did differ, however, in complexity and structure. (Extensive tables of findings are included.) (HOD)

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# EFFECTS OF MEDIA AND CONTEXT IN DETERMINING COMMUNITY ISSUE SALIENCES AND EVALUATIONS

By

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More than a decade of intensive research effort has provided substantial confirmation of the basic agenda-setting hypothesis. Despite this outpouring of research, researchers have just begun to explore contingent conditions affecting agenda setting by the media. Little is known, furthermore, about the subsequent effects of issue saliences once they are produced by the media.[1] The study reported here provides evidence on both of these topics.

## AGENDA-SETTING EFFECTS ON ISSUE SALIENCES

The agenda-setting hypothesis states that heightened coverage of issues by the media causes increased perceptions of that issue as salient among the public. Time-based research designs have provided the most appropriate tests of it. During a statewide election campaign, Tipton, Haney and Baseheart found that the direction of cross-lagged correlations from measurements taken about a month apart supported the agenda-setting hypothesis.[2] Using the same design, but with a four-month lag between measurements, Shaw and McCombs's data provided strong evidence for the impact of newspaper coverage of issues on the public agenda during the 1972 presidential campaign.[3] Weaver, Graber, McCombs and Eyal similarly found agenda-setting effects by the media during the 1976 presidential election on the public agenda of campaign issues after about a fourteen-week lag.[4]

A distinct disadvantage of the research designs used in these studies is that the lag length between measurements must be set by the researcher. Lags must be long enough to "capture" an

effect, but short enough so that the effect does not dissipate before the second measurement is taken.[5] Determining the correct lag lengths for community issues can be difficult, because many topics--education, local government, crime and the like--are covered daily by metropolitan newspapers. At any given point in time, then, there is already a base of individuals in communities who perceive certain issues as salient. This base probably grows and contracts according to the ebb and flow of media coverage of controversies surrounding certain topics.[6] Lag lengths are likely to vary considerably depending upon the nature of the issue in question.

Time-series designs with frequent measurements are necessary to test the agenda-setting hypothesis in such situations. For example, Funkhouser examined the relationship between the public's issue concerns during the 1960's (as measured by the Gallup poll's "most important problem" question) and emphasis on issues in national news magazines during that era. His data indicated that the emergence of public opinion on issues closely coincided with peak media coverage of them.[7] Based on a similar data set for the years 1960 to 1977, MacKuen showed that public opinion on major issues--race, campus unrest, Vietnam--was primarily "media driven."[8] Similarly, Carlsson, Dahlberg and Rosengren found that editorial comment in Swedish newspapers tended to covary with public support for the government and economic conditions over a seven-year period.[9]

Smith's content analysis of a prominent newspaper in Louisville, Kentucky revealed that seven issues were given heavy

coverage from 1974 through 1981. In order of prominence, these were education, crime, local government, economic development, public recreation, health care, and the environment. The article counts for each of the seven issues were then subdivided to "match" 22 public opinion surveys on their importance taken at equal intervals during the same time period. The analysis indicated that media coverage of the issues tended to both lead and follow public opinion in a cyclical pattern over time.[10]

These results are consistent with Tichenor, Donohue and Olien's extensive findings concerning the role of media in community conflicts.[11] According to them:

> "...[C]overage from newspapers and television generally occurs later in the process and tends to accelerate attention to social issues rather than initiate the movements themselves as is often assumed. The media coverage creates a level of attention and public concern that would occur otherwise but exists after there has been organizational activity surrounding the issues and defining the issue as news."[12]

Olien et al.'s most recent study, for instance, showed that coverage of community conflict over a powerline in four Minnesota communities peaked toward the end of it, especially in the metropolitan media. Interestingly, their results also showed that newspapers were the most heavily used source of information about the conflict in the early stages of the conflict, while in its later stages television was the most used source. Moreover, the percentage of those finding the issue a "touchy topic" and "very important" peaked about three-quarters of the way through the time period of the controversy.[13]

## SUBSEQUENT AGENDA-SETTING EFFECTS

Although it is less than substantial, the evidence indicates that issue saliences do affect subsequent attitudes and behaviors. After controlling for partisanship and the ideological slant of their newspapers, McLeod, Becker and Byrnes found that respondents who considered honesty in government and Vietnam as important issues in the 1972 campaign were less likely to vote for Nixon. Their results also showed a direct link between reading of a liberal newspaper and concern about issues associated with McGovern and support of him as a candidate.[14] Becker demonstrated some moderate relationships between individual saliences on six issues and attitudes toward prominent aspects of them in the 1972 presidential campaign.[15]

A prominent behavioral effect of increased issue saliences is intensified discussion about them. Atwood, Sohn and Sohn found significant correlations between the content of a local daily newspaper and what their subjects reported both reading and talking about with other people.[16] Sohn extended this analysis to include a second measurement nine months later. The cross-lagged correlations indicated that newspaper coverage increased discussion of the town's problems but did not affect issue saliences.[17]

Time-series designs are necessary to untangle the complex causal relationships between issue saliences and subsequent effects. Logically, it would seem that the development of issue saliences would causally precede the development of attitudes and behaviors. But the direction of influence may vary according to

the operationalization of issue saliences. For example, perceptions of issues as personally salient may develop prior to attitudes about them. On the other hand, attitudes on issues conceivably might be formed before perceptions of them as important to the general community.[18]

## EFFECTS OF CONTEXT ON SALIENCES AND EVALUATIONS

Environmental context appears to modify agenda-setting effects of commuity media in some instances. Zucker's analysis of public opinion polls and media coverage of several issues had an affect on public perceptions of their importance only when the issues were "unobtrusive;" that is, when people could have no direct or personal experience with the issue.[19] Hubbard, DeFleur and DeFleur found that citizens' perceptions of issue saliences in Spokane, Washington were unrelated to media coverage of them, but they were related to public agency records indicating their actual prevalence in the community.[20] Watt and van den Berg's data indicated agenda-setting effects by the media during the early stages of a controversy involving noise pollution from the landing of Concorde jets in Washington, D.C., but the actual temperature also affected the public's complaints about the landings.[21]

Environmental context is especially likely to modify agenda-setting effects because media coverage of issues tends not to reflect competely reality. Funkhauser, for example, showed that news magazines coverage of significant issues during the 1960s did not closely coincide with actual events related to them.[22]

Similarly, a number of analyses have demonstrated that media coverage of a significant issue in many communities--crime--is seldom related to actual incidences of this problem.[23] Thus environmental context is an important variable to control for in agenda-setting studies, particularly in regard to community issues.

## RESEARCH QUESTIONS

This literature review, then, suggests these research questions:

1) To what extent are both issue saliences and attitudes over time related to media content?

2) To what extent does environmental context influence issue saliences and attitudes in relationship to media coverage?

3) What is the nature of the causal relationship among media coverage, issue saliences, attitudes and contextual variables?

## EXAMINING RELATIONSHIPS IN A SYSTEMS CONTEXT

General systems theory can provide a useful framework for addressing these research questions.[24] A strength of general systems theory is that it provides a basis for making predictions about complex causal relationships among elements in a social system. Specifically, the notion of mutual causality is well-incorporated in the general systems model through the concept of feedback loops.

Evidence presented earlier suggested that media and public

opinion may mutually influence one another over time in regard to community issues. Translated into general systems language, feedback loops should exist over time between media coverage and public opinion. Heise has pointed out that three types of loops are possible: 1) control loops, in which variation in an input variable leads to the opposite reaction in the output variable, thus creating an oscillatory time series; 2) unstable loops, in which as input and output variables interact over time, increments of change become larger and larger until the system becomes unstable; and 3) amplifying loops, in which increases in the input variable causes increases in the output variable (and vice versa) within defined limits.[25] Given the tendency for media to serve as important elements in stabilizing social systems, media-public opinion interactions over time in communities are most likely characterized by control and amplifying feedback loops.[26]

An often unwarranted assumption of cross-sectional studies is that the dynamics of the influence process between the variables in question has been completed at the time of measurement. For example, evidence suggests that it takes a period of between two and six months for cumulative media coverage of an issue to have maximum impact on the public agenda.[27] Considerable literature exists, furthermore, concerning the "sleeper effect" in regard to attitude change in response to persuasive communications.[28] Yet it is difficult to predict precisely lag lengths in a complex system involving saliences, attitudes, context, and media coverage variables. However, different lag lengths among relationships can be tested in a time-series analysis.

Figure 1 below provides a flowgraph of the expected

relationships among the media coverage, issue salience, attitude, and context variables.

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Figure 1 about here

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The symbols on the left-hand side of the graph represent inputs into the system: X(t)= media input and W(t)= contextual input. The symbols on the right-hand side of the graph represent the outputs from the system: Y(t)= salience output and Z(t)= attitudinal output. The lower case letters in the boxes, a through j, indicate operators (or functions) by which the feedback loops translate inputs into outputs. The subscripts, t-n, attached to each operator symbol indicate that each operates with a lag of unspecified length.

Despite its seeming complexity, this flowgraph represents a rather simple causal system of feedback loops among inputs and outputs. (Indeed, the upcoming analysis may produce systems that are much more complex.) Perhaps the easiest way to interpret this flowgraph is to examine first each subsystem associated with a single input and output, say X(t) and Y(t) or Z(t). Each of these subsystems is characterized by a single feedback loop between input and output. Notice that the subsystems represented by W(t) and Y(t) or Z(t) contain no feedback loops, since public opinion logically would not influence context variables in most instances. Each of these subsystems is then connected to one another through additional feedback loops.

Based on the rules of flowgraph algebra, the following structural equations representing these relationships can be

derived:[30]

$$Y = aW_{t-n}$$

$$Y' = cX_{t-n} + bY'_{t-n} + eZ_{t-n}$$

Since $Y_{(t)} = Y + Y'$, $Y_{(t)} = aW_{t-n} + cX_{t-n} + bY'_{t-n} + eZ_{t-n}$

$$Z' = hW_{t-n}$$

$$Z = fX_{t-n} + gZ_{t-n} + Y'_{t-n}$$

since $Z_{(t)} = Z + Z'$, $Z_{(t)} = hW_{t-n} + \ldots + gZ_{t-n} + Y'_{t-n}$

where: W= context input; X= media input; Y= salience output; Z= attitudinal output

The coefficients in these structural equations can be estimated using multiple regression and canonical correlation techniques. It is assumed here that all operators are linear, although feedback loops can operate in a nonlinear manner also.

## METHODOLOGY

The Public's Agenda. This study was able to make use of a unique series of 22 surveys which were conducted three times a year from 1974 through 1981 in Louisville, Kentucky. They were originally intended to provide information for use by local government decisionmakers.[31] Each of the 22 surveys was based on a quota sample with random starts, varying in size from 400 to 472 respondents,[32] age 15 or older. Each sample was stratified by age, race, sex and within eight subdivided areas of Jefferson County (which includes the City of Louisville) to be proportional to census results and population projections supplied by the Kentucky State Data Center.[33]

The questionnaires were administered by professional

interviewers, who were given lists of randomly selected "starting" addresses drawn from city and county directories, along with individual quota matrices. They were instructed to begin their searches for eligible respondents at the first address on the list, moving to the next residential address on the left until one was located and interviewed. The process then began again at the next address on their lists. A random sample of at least 20% of the interviews was verified by phone.

In each survey, this question was asked:

> "What do you think are our community's (i.e., Louisville and Jefferson County's) most important problems?"

Interviewers were instructed to probe for up to three responses. Issue categories were developed from the responses from the first few surveys. Subsequent analyses of responses coded as "other" in later surveys showed that it was unnecessary to add to the original set of 19 categories. Appendix A contains the definitions of each of these categories.

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Table 1 about here

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Table 1 above shows the aggregated results from the 22 surveys. Crime and education were by far the dominant concerns of respondents during the eight-year period of these surveys, accounting for 40% of the responses. Economic development, road maintenance, the environment, and local government also ranked among the top issues, accounting for another one-third of all responses in the 22 surveys.

The Media's Agenda. Because Louisville is a media-rich city, separate indices based on both the major print and broadcast media would have been the most appropriate method of measuring media coverage of issues. Time and cost factors precluded such comprehensive measurement in this study. Consequently, the Louisville Times's coverage of community issues during the eight-year period of this study was measured.[34] This newspaper's emphasis on community issues is likely a good indicator of general media coverage of them. Previous studies have normally found high intercorrelations between print and electronic media's coverage of issues.[35]

A simple random sample of 236 editions (29 per year) of the Louisville Times (substituting the Courier-Journal for Sunday editions) was drawn from those issued during the years 1974 through 1981. Staff members of the Urban Studies Center assigned all stories from the "front and "metro" pages on the basis of their "major theme" to one of 21 categories, using the same rules used to code responses to the public opinion question (see Appendix A). Topics which did not relate to a local issue or did not fit one of the categories were coded as "other." Throughout the course of the coding, three independent checks of intercoder reliability were performed, resulting in acceptable levels of agreement each time (at least +.85).

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Table 2 about here

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These procedures resulted in a final sample of 2,369 articles. Table 2 above shows the aggregate results by the 21 categories. Education and crime were the top issues on the

media's agenda, accounting for over 17% of the stories on the front and metro pages of the newspapers. Another 20% of the stories on these pages were devoted to local government, economic development, public recreation, health care, the environment, the needy, courts, and community spirit.

VARIABLES

The Media and Public Opinion Series. At this point in the analysis, an important decision was how to treat the media and public opinion data. The most frequent method has been to create "official" agendas for the media and the public and then examine the match between the two at different observation points. This method did not prove useful in this study, because the public rankings of the issues tended to be stable across the 22 surveys. As a consequence, the data over time indicated "agenda matching" on the part of media rather than agenda setting.

Inspection of the data revealed, however, substantial variance in mentions of individual issues from time point to time point, even though the rankings tended to remain stable. Thus issues were examined separately in the upcoming analysis. Erbring, Goldenberg and Miller have pointed out that this method has the advantage of allowing for controls of contextual variables that may be acting on the both the media and the public.[36]

Consequently, the media time series were created by summing the article count for each issue into three periods per year: January-April, May-August and September-December. Once each

media series was broken down into the 22 data points, it was apparent that only the top seven issues constituted true time series.[37] The other issues, as might be expected, received extensive coverage in some time periods and not in others. Therefore, the analysis focused on the top seven media issues.

Then the resulting time series for the seven media issues were "placed" against their corresponding public opinion series so that the T-0 point (i.e., the point where neither the media nor public opinion series are lagged) represents the relationship between public opinion measurements and media coverage during the preceding four-month period. As each time series will be lagged in the analysis, the T-0 correspondence between cross observations is arbitrary.[38]

The length of the time series analyzed in this study is only 22 observations. The standard rule of thumb is that a minimum of at least 30 observations is necessary to perform time-series analysis procedures. However, the number of observations necessary to obtain reliable results is also relative to the phenomenon being studied. Swiftly moving phenomena, such as children's attention to a television program, necessitate frequent measurements over a short time span. Public opinion, which moves more slowly, can be assessed with less frequent measurements over a longer period of time. In fact, the 22 observations of public opinion and media appear to measure adequately the trends associated with each issue. More frequent measurements would probably have been redundant in most cases.

Public Evaluations. In each fall survey (every third one) in the series, local government's handling of the problems and

issues was assessed by this question:

> Now, we'd like to find out how things are going here [in the whole community.] I'd like for you to take this community report card and use it as a guide. I will read several phrases referring to local community issues and services. Please tell me how you would grade each of these issues and services by giving them an A, B, C, D, or F. Judge them on how well or how poorly you think each particular issue or service is being handled [on a countywide basis.]39

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Table 3 about here

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Table 3 above shows the percentage of "D's and "F's" awarded yearly to each issue by the respondents. Because the question was asked every third survey, excluding all "missing data" would have reduced the number of observations to an unacceptable level. To avoid this problem, dummy variables were created by assigning a value of "1" to each survey taken in a year when "D" and "F" evaluations exceeded the average number for the eight-year period and a value of "0" when the survey occurred in a year when they were equal to or less than average.

Context Variables. Few research studies were available to guide the selection of context variables for each of the seven issues. A key problem in this regard was obtaining data for them of sufficient frequency to match the media coverage and public opinion series. A variety of context indicators were used in this study primarily on their face validity.

In the case of crime, monthly or quarterly total crime statistics have only been kept the last few years by Louisville and Jefferson County law enforcement agencies. Yearly total

crime figures for 1974 through 1981 were available for Jefferson County from the Department of Justice's Uniform Crime Reports. A dummy variable was created by assigning "1" to each survey taken in a year when total crime reports exceeded the average for the eight-year period and "0" to surveys in years that were at or below the average.

A context variable was formed for the environment issue based on an index reported by the Jefferson County Air Pollution Board. Monthly or quarterly figures were not available for the entire eight-year period, but the existing data did show that the air pollution index skyrocketed in the summer months and dropped considerably in other months. Based on this trend, a dummy variable was formed by assigning a score of "1" to surveys conducted at the end of the summer or early fall and "0" to those taken in the winter or spring. This same seasonal dummy variable served as a context variable for the public recreation issue, since people can be expected to be more concerned about this topic in the summer than other seasons.

Monthly unemployment figures for metropolitan Louisville over the eight-year period were accessible from publications of the Bureau of Labor Statistics from the Department of Labor. A context variable for crime was formed by averaging the January-April, May-August, and September-December figures for each year.

In the fall of 1975, the public school system in Louisville and Jefferson County was integrated through means of court-ordered busing. A two-year controversy ensued, which greatly affected the public's perceptions of the education as a problem. To control for this period of time, a dummy variable was formed

by assigning a "1" to surveys conducted during the years 1975 through 1976 and "0" to those conducted before and after those years.

Throughout the eight-year period of this study, Louisville was served by two very different mayors. From 1974 through 1977, a highly popular Democrat served as mayor. In 1977, he was replaced by another Democrat who almost immediately became highly controversial for his disputes with the Board of Aldermen and his highly publicized personal life. In 1981, the previous mayor was elected once again to the office. To control for this context, a dummy variable was created by assigning a "1" to surveys conducted in years when the controversial mayor held office and "0" when the popular mayor held office.

Inflationary medical costs became a significant health care issue in the 1970's. This was a particular problem in Louisville, where the university hospital, which provides health care to the indigent, faced constant financial problems. To control for this context, a variable was created (in the same manner as the crime context variable) from the monthly medical-care inflation rates for the metropolitan Louisville area supplied by the Bureau of Labor Statistics of the Department of Labor.

RESULTS

The analysis of each of the seven issues involved a three-step process. First, the zero-order correlations for the T-0 and lagged values among all variables for each of the seven issues were examined. In each of the following tables, negative lags of

4-, 8-, and 12-months indicate that the top variable in each column heading is leading the bottom variable in each heading. The positive lags of 4-, 8-, and 12-months indicate that the bottom variable in each column heading is leading the top variable in each heading.

A useful way of examining these cross-correlations for the various relationships is to consider the pattern of relationships across all of the positive and negative lags.[40] Significant correlations at one or more (but not all) of both the positive and negative lags is an indication of reciprocal relationship between the two series in question. Significant cross correlations at only the negative lags or the positive lags reflect a one-way causal process between the two series. Significant correlations across all positive and negative lags indicate spuriousness due to some force affecting upon both time series in question. Finally, nonsignificant correlations at all positive and negative lags represent the null effects model.

In the next step in the analysis, a regression analysis was performed to determine the "best fit" model predicting saliences and evaluations.[41] In this analysis, the salience and evaluation series for each of the seven issues were regressed on their own lagged values and the T-0 and lagged values of all other variables, using a forward inclusion method[42] If relationships among the variables are reciprocal, the best-fit models for each should account for significant amounts of variance and approximate the structural equations derived from Figure 1.[43]

In the final step in the analysis, a canonical correlation analysis was performed for each issue. In this analysis, Set 1

consisted of the T-0 and lagged values of the salience and evaluation series and Set 2 contained the T-0 and lagged values of the media coverage and context variables. Special attention will be paid to the redundancy figures calculated for each canonical root.[44] The redundancy index provides an indication of the direction in which the results should be interpreted. Generally speaking, a canonical root must account for at least 5% of the variance to be considered substantial enough to interpret. If the reciprocal model posited here holds for each issue, it would be expected that the variance accounted for by each set would be in excess of this 5% baseline figure.

Economic Development

Table 4 below shows the results of these analyses for the economic development series. Turning first to the cross-correlation analysis, saliences appear to lead media coverage by about an 8-month lag, while correlations (although insigificant) at the positive lags indicate that media coverage leads changes in evaluations of economic development. The substantial significant correlations between evaluations and saliences at all negative and positive lags suggest the influence of a third variable factor. Although the context variable (unemployment rate) is unrelated to saliences at any lags, it is significantly correlated with evaluations at the positive 8- and 12-month lag and with media coverage at the negative 4-month lag.

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Table 4 about here

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The regression analyses shown in Table 4 support a recipro-

cal influence model for relationships among the economic development series. Substantial amounts of variance were accounted for by the final models for both saliences ($R^2$ = .754) and evaluations ($R^2$ = .842). Note, however, that a T-0 and or a lagged value of all variables were included in the salience model, while a much simplier model, which excludes the media coverage variable, resulted for evaluations. The reciprocal model receives further support from the canonical analysis. Although the context-media coverage set accounts for considerably more variance than the salience-evaluation set, the redundancy index for both exceeds the 5% baseline statistic.

Education

Table 5 below shows the results of the analyses of the education series. Looking at the cross-correlation analysis, a pattern of moderately large and significant correlations is apparent at both positive and negative lags for all the bivariate relationships, indicating a reciprocal influence over time among the variables. This pattern is particularly striking in regard to cross-correlations of the context variable (whether the survey was conducted during the school desegregation controversy or not) with saliences, evaluations, and media coverage.

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Table 5 about here

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Again, the best-fit models for both education saliences and evaluations accounted for substantial amounts of variance ($R^2$ = .792 and .756, respectively). Note that for this issue, the salience model excludes the T-0 and any lagged value of media cover-

age, while the T-0 value of media coverage is included in the evaluation model. The redundancy figures for both the evaluation-salience and media coverage-context sets are about equal at about 17%, again suggesting mutual influence.

The Environment

Table 6 shows the results of the analyses performed on the environment series. Here again, a pattern of moderatelly large correlations occured at both negative and positive lags for all the various bivariate relationships, with the exception of the relationship between evaluations and the context variable (a seasonal dummy variable).

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Table 6 about here

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Large amounts of variance were accounted for by the final models for both saliences and evaluations ($R^2$ = .903 and .830, respectively). Note, however, that while the salience model contains at least one representative of the various variables included in the analysis, the evaluation model is dominated by salience variables and a 4-month lagged value of itself. The canonical analysis again confirmed the reciprocal nature of the influence process among the variables over time, with significant amounts of variance being explained by both sets. (The T-8 and T-12 values of the context variable were dropped from the canonical analysis due to multicollinearity problems.)

Crime

Table 7 below shows the analyses of the crime series. Saliences and media coverage are significantly related to one another only at the T-0 lag (saliences after four months of media

coverage). The cross-correlations for the other bivariate relationships among the crime series display once again a pattern of significant or at least substantial correlations at both positive and negative lags, with the exception of those for media coverage and the context variable (crime figures for the area).

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Table 7 about here

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As was the case with the previous issues analyzed, the best-fit regression models for saliences and evaluations both accounted for significant amount of variance ($R^2$ = .968 and .670, respectively). The salience model is a complex one involving a full set of variables, while the evaluation model excludes the T-0 or any lagged values of the context variable. Turning to the canonical analysis, note that no evaluation variable loads significantly on the first set and the context and media variables load only marginally on the second set, although the redundancy index for both sets exceeds 5%.

Local Government

Table 8 below repeats the analysis for the local government time series. The cross-correlations for the local government series deviate somewhat from the general pattern found for the other issues examined to this point. Media coverage is generally unrelated to saliences or evaluations. Quite strong correlations between evaluations and saliences appear at the negative lags, suggesting that the former lead the latter over time. Saliences are quite strongly correlated at both positive and negative lags with the context variable (dummy variable demarking two different

government administrations). Large cross-correlations are found at positive and negative lags for the relationships between the context variable and evaluations and media coverage.

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Table 8 about here

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This pattern of zero-order correlations resulted in two rather complex models for saliences and evaluations ($R^2$ = .755 and .897, respectively). T-0 or a lagged value of all variables were included in each model, with the exception of the context variable in the salience model. The results of the canonical analysis indicated that no media coverage variable loaded substantially on the second set, which was dominated by the T-0 value of the context variable. The redundancy figures indicated that substantial amounts of variance were accounted for by each set. (Note that lagged values of the evaluation and context variables were excluded from the regression and canonical analyses due to multicollinearity problems.)

Public Recreation

Table 9 shows the analysis of the public recreation series. A pattern of cross-correlations similar to that found for the crime series emerged. Media coverage was unrelated at the T-0 points or any of the lags to saliences or evaluations. Saliences and evaluations were quite strongly related at the T-0 point and the positive 4- and 8-month lag. The context variable (a seasonal dummy) was generally unrelated to saliences or evaluations, but was significantly related to media coverage at both negative and positive lags.

Table 9 about here

Considerable amounts of variance were accounted for the final model for both saliences and evaluations ($R^2$ = .614 and .902, respectively). dent variables. However, the salience and evaluation variables dominated both models, with the context and media coverage variables playing only minor roles in each. The evaluation and context variables did not load significantly (.30) on Set 1 or 2, respectively. As a result the canonical correlation between the two sets is only .44, substantially less than found for the other issues examined to this point. The results of both the regression and canonical analyses for the public recreation series were highly complicated by multicollinearity problems as noted in Table 9.

Health Care

The analysis of the final issue, health care, is shown below in Table 10. Significant correlations are apparent at the negative 12- and 8-month lags between saliences and media coverage, but media coverage appears unrelated to evaluations. Saliences and evaluations for this issue also appear only marginally related. The context variable, on the other hand, is related at one lag, at least, with salience evaluations and media coverage.

Table 10 about here

Values of the media coverage, saliences, evaluation and context variables combine to account for significant amounts of variance in the best-fit models for both the salience and evalua-

tion series ($R^2$ = .566 and 783, respectively). This pattern is repeated in the canonical analysis, where both sets of variables account for equal variance in one another.

## A VALIDITY CHECK

It is important to examine the nature of the residuals when assessing the validity of the regression models discussed above. Autocorrelated error terms can result in serously underestimated variances, although the regression coefficients themselves are unbiased.[45] This problem is compounded when lagged values of the dependent variable are included in the model, as is the case in this analysis. In this situation, the estimates of the coefficients for the lagged dependent variables are likely to be overestimated at the expense of other variables in the model ( and perhaps those orginally excluded).[46] Thus, in the regression models, there is some danger that the contribution of the media coverage and context variables, particularly, have been underestimated.

Because usual methods of estimating autocorrelation are likely to underestimate the problem when lagged values of the dependent variable are included in the model, an alternative method, suggested by Durbin, was used.[47] First, the OLS regression technique was used to estimate the final models for each issue. Then the resulting residuals were regressed on all variables included in the model and the residual variable lagged one time period. Table 11 shows the resulting standardized

regression coefficients for the lagged residual variable. These results indicate some problem with autocorrelation appears to exist when the salience series for economic development, crime and health are treated as dependent variables and when the environment evaluation is also. For these models, then, their $R^2$ terms and the coefficients for the lagged values are overestimated to some extent.

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Table 11 about here

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The problem models were reestimated (not shown) using a technique suggested by Ostrom, which involved substituting an instrumental variable (predicted values of the dependent variable) and differencing of this variable by one degree.[48] Estimates obtained using these procedures only slightly decreased the size of the coefficient of the lagged value of the dependent variable and the resultant total $R^2$ value. Further experimentation with the problem models indicated that no variables originally excluded from them would now be included in the reestimated ones.

## CONCLUSIONS

The results of this study showed strong interrelationships among media coverage, context, saliences, and evaluation variables for seven prominent community issues. The regression and canonical correlation analyses suggested that a reciprocal or cyclical influence occurred over time for the media coverage and context variables, on the one hand, and saliences and evaluations on the other. The final regression models for each issue did differ,

however, in complexity and structure. Moreover, these relationships operated with varying time lags from issue to issue.

The strong relationships between saliences and evaluations for most issues is particularly worthy of note. A number of previous studies have concluded, as did the authors of the American Voter, that "widespread ignorance and indifference over matters of policy" characterize most citizens.[49] Such studies, however, have usually been concerned national and international issues far removed from the daily lives of the average person. The citizens who responded to this series of 22 public opinion surveys over an eight-year period appeared to be quite rational in their perceptions of the importance of and evaluations of local government's handling of their community problems.

The fact that media coverage, context, salience, and evaluation variables were related to one another over time with lag lengths of 4-, 8-, and 12-months points out the importance of explicitly including time as a variable in future studies. In fact, one wonders how much of the past research supporting the null effects model was a result of measurements taken before the dynamics of the influence process have stabilized. Hovland's "sleeper effect" should be the subject of renewed research efforts using time-series analysis techniques.

The model tested in this study is a simplistic one. It is likely, for example, that controversy involving one problem area in a community can affect saliences and evaluations in other areas. Based on a portion of the surveys used in this study, Murrell and Schulte found a "contagion effect" during the contro-

versy surrounding court-ordered integration of the public school system in Louisville. Services involved in the controversy--schools, police, community pride, human relations, and local government--all underwent significant declines in evaluations during this controversy. Non-related services, such as the environment, fire protection, recreation, and sanitation, were not affected by the controversy.[50] More complex models in future studies could be designed to test such contagion effects.

The basic stumbling block to time-series analyses of any sort, of course, is the time consuming and costly task of developing the necessary data sets. At the community level, more time-based data sets could be gathered through the collaberation of local government and universities. The data set used in this analysis has now provided valuable information to government decisionmakers and been used by academic researchers in a variety of disciplines.

FOOTNOTES

1. Maxwell E. McCombs, "The Agenda-Setting Approach," in Dan Nimmo and Keith R. Sanders, eds., Handbook of Political Communication (Beverly Hills: Sage Publications, 1981).

2. Leonard Tipton, Roger D. Haney, and John R. Baseheart, "Media Agenda-Setting in City and State Election Campaigns," Journalism Quarterly, 52: 15-22 (Spring, 1975).

3. Donald L. Shaw and Maxwell E. McCombs, eds., The Emergence of American Political Issues: The Agenda-Setting Function of the Press (St. Paul: West Publishing Co., 1977).

4. David H. Weaver, Doris A. Graber, Maxwell E. McCombs, and Chaim H. Eyal, Media Agenda-Setting in a Presidential Election (New York: Praeger, 1981).

5. Steven H. Chaffee, "Longitudinal Designs for Communication Research: Cross-Lagged Correlation," paper presented to the Association for Education In Journalism, Carbondale, Illinois, August, 1972.

6. See Philip Palmgreen, "Mass Media Use and Political Knowledge," Journalism Monographs 61: (May, 1979).

7. G. Ray Funkhouser, "The Issues of the Sixties: An Exploratory Study of the Dynamics of Public Opinion," Public Opinion Quarterly 37: 62-75 (Spring, 1975).

8. Michael B. MacKuen and Steven L. Coombs, More Than News: Media Power in Public Affairs (Beverly Hills: Sage Publications, 1981).

9. Gosta Carlsson, Alf Dahlberg, and Karl Erik Rosengren, "Mass Media Content, Political Opinions and Social Change," in Karl Erik Rosengren (ed.), Advances in Content Analysis (Beverly Hills: Sage Publications, 1981).

10. Kim A. Smith, "Mass Media and Community Public Opinion," unpublished monograph, East Carolina University, January, 1985.

11. Phillip J. Tichenor, George A. Donohue and Clarice N. Olien, Community Conflict and the Press (Beverly Hills: Sage Publications, 1980), p. 3.

12. C.N. Olien, George A. Donohue, and Phillip T. Tichenor, "Media and Stages of Social Conflict, Journalism Monographs: 90 (November, 1984).

13. Olien et al., op. cit.

14. Jack M. McLeod, Lee B. Becker, and James E. Byrnes,

"Another Look at the Agenda-Setting Function of the Press," Communication Research, 1: 131-165 (April, 1974).

15. Lee B. Becker, Maxwell E. McCombs, and Jack M. McLeod, "The Development of Political Cognitions," in Steven H. Chaffee (ed.), Political Communication (Beverly Hills: Sage Publications, 1975).

16. L. Erwin Atwood, Ardyth B. Sohn, and Harold Sohn, "Daily Newspaper Contributions to Community Discussion," Journalism Quarterly, 55: 570-576 (1978).

17. Ardyth B. Sohn, "A Longitudinal Analysis of Local Non-Political Agenda-Setting Effects," Journalism Quarterly, 55: 325-332 (Summer, 1978).

18. McLeod, Becker and Byrnes, op. cit. first pointed out this important distinction between intrapersonal, perceived community, and interpersonal (topics of discussion) agendas. In this study, the first two agendas were measured over time. Preliminary analysis of the data has shown some causal differences, which will be the focus of an upcoming report.

19. H. G. Zucker, "The Variable Nature of News Media Influence," in Brent D. Reuben (ed.), Communication Yearbook II (New Brunswick: Transaction Books, 1978).

20. Jeffrey C. Hubbard, Melvin DeFleur and Lois B. DeFleur, "Mass Media Influence on Public Conceptions of Social Problems," Social Problems, 23: 23-34 (October, 1975).

21. James H. Watt, Jr. and Sjef van den Berg, "How Time Dependency Influences Media Effects in a Community Controversy," Journalism Quarterly, 58: 43-51 (Spring, 1981).

22. Funkhauser, op. cit.

23. E.g., Edna F. Einsiedel, Kandace L. Salomone and Frederick P. Schneider, "Crime: Effects of Media Exposure and Personal Experience on Issue Salience," Journalism Quarterly, 61: 131-136 (Spring, 1984).

24. E.g. Walter Buckley, Sociology and Modern Systems Theory (Englewood Cliffs: Prentice-Hall, Inc., 1967) or Fernard Cortes, Adam Przeworski and John Spraque, Systems Analysis for Social Scientists (New York: John Wiley and Sons, 1974).

25. David R. Heise, Causal Analysis (New York: John Wiley and Sons, 1975)

26. A number of authors have pointed out the media's role in system maintenance through conflict management. See especially Tichenor, Donohue, and Olien, op. cit. on this point.

27. Gerald C. Stone and Maxwell E. McCombs, "Tracing the Time Lag in Agenda-Setting," Journalism Quarterly, 58: 51-55 (Spring, 1981).

28. Carl I. Hovland, Arthur A. Lumsdaine and Fred D. Sheffield, Experiments in Mass Communication (Princeton, N.J.: Princeton University Press, 1949).

29. For an explanation of flowgraph analysis, see Heise, op. cit. or Cortes, et al. op. cit.

30. See Cortes et al., op cit. for an explanation of flowgraph algebra. Basically, the rules for deriving structural equations from flowgraphs are: 1) a state of the system is a result of performing the specified operation within the box on the state immediately prior to the reversed direction of flow; 2) when the operations are combined along the same lines, multiply; 3) when two operations are combined by two lines coming together, add; and 4) (Mason's Rule) the functions of a single loop is the ratio of the operations on the forward path divided by one minus the product of the forward path and the feedback path.

31. This survey series was designed by Mr. Paul Schulte and Dr. Stanley A. Murrell. For more information on this series, see Stanley A. Murrell and Paul J. Schulte, "A Procedure for Systematic Citizen Input to Community Decision-Making," American Journal of Community Psychology, 8: 19-30 (1980).

32. Distributions of measured demographic variables (e.g., tenure, family income, education) were close to those found in the most recent census results or projections. Based on the 22 surveys done in the program, results for the total sample are accurate within four or five percentage points, assuming a 95% confidence interval. For a detailed description of quota samples with random starts, see Seymour Sudman, Reducing the Cost of Surveys (Chicago: Aldine Publishing co., 1967).

33. Adjustments were made to the quota matrix when necessary, based on the most current census data or population projections. As a result of these adjustments, the samples gradually became composed of greater numbers of older, blacks, women, and affluent individuals. See Smith, op cit. for details on these changes.

34. The Louisville Times' agenda was measured rather than the more widely-circulating Courier Journal because of its greater empahsis on Louisville and Jefferson County public affairs.

35. E.g, Shaw and McCombs, op cit and Weaver, Graber, McCombs, and Eyal, op. cit.

36. Lutz Erbring, Edie N. Goldenberg and Arthur H. Miller, "Front-Page News and Real-World Clues: A New Look at Agenda-Setting by the Media," American Political Science Review, 24: 16-

49 (February, 1980).

37. The 1974 January-April media data point was dropped from the analysis, because the survey series did not start until the fall of 1974. Twenty five surveys were actually conducted in this series by the Urban Studies Center at the University of Louisville. Only the first 22 surveys are analyzed in this report, however, because the last three were irregularly scheduled.

38. The handling of agged variables is discussed in detail in Richard McCleary and Richard A. Hay, Jr., Applied Time Series Analysis for the Social Sciences (Beverly Hills: Sage Publications, 1980).

39. This question was first asked about problems and issues associated with the respondents neighborhoods. A follow up question was then asked about their perceptions of community problems and issues, which is the one analyzed in this report. Its exact wording was: "Now let's do the same thing again, but this time think in terms of the whole community, and by that I mean all of Louisville and Jefferson County. I'd like for you to grade the way you think these similar services are being handled on a countywide basis."

40. Normally the cross correlations are plotted on cross correlograms. The large number of bivariate cross correlations examined in this study, however, made this procedure impractical. For further detail on interpreting these patterns see Robert Krull and Albert S. Paulson, "Time Series Analysis in Communication Research," in Paul M. Hirsch, Peter V. Miller and F. Gerald Kline, Strategies for Communication Research (Beverly Hills: Sage Publications, 1977), pp. 187-204 or Ronald C. Kessler and David F. Greenberg, Linear Panel Analysis: Models of Quantitative Change (New York: Academic Press, 1981).

41. See Charles W. Ostrom, Jr., "Time Series Analysis: Regression Techniques," Sage University Paper series on Quantitative Applications for the Social Sciences. (Beverly Hills: Sage Publications, 1976).

42. Due to the shortness of the time series, conventional increment to R2 tests were not used. Instead, variables were added to each regression equation, in order of variance explained in the dependent variable, until the adjusted R2 values began to drop, regardless of the level of significance of the individual regression coefficients.

43. Multicollinearity, particularly among lagged values of the series, was a problem in certain instances. As noted, the only solution to this problem was to drop lagged values of the series. The general rule followed was to drop the longer lagged values of the variable in question until the problem was corrected.

44. For a description of the redundancy index see Douglas Stewart and William Love, "A General Canonical Correlation Index," Psychological Bulletin, 70: 160-163.

45. See Ostrom, op. cit.

46. Ostrom, op. cit.

47. J. Durbin, "Testing for Serial Correlation in Least-Squares Regression When Some of the Regressors are Lagged Dependent Variables," Econometrica 38: 410-421.

48. Ostrom, op. cit.

49. Angus Campbell, Philip E. COnverse, Warren E. Miller and Donald E. Stokes, The American Voter (New York: John Wiley and Sons, 1960), p. 186.

50. Stanley A. Murrell and Paul Schulte, "Measuring Citizen Evaluations of Services Amidst Community Change," American Journal of Community Psychology, 8: 387-400 (1980).

## Appendix A

### Public Opinion and Media Issue Category Definitions

Sanitation. References to street cleaning, garbage collection and other sanitation services.

Housing. References to the quality and quantity of housing in the Louisville area.

Public Recreation. References to public parks, playgrounds, golf courses and other public facilities.

Health Care. References to private or public health problems, emergency medical services, doctors, hospitals and the Public Health Department.

Crime. References to local police departments, police conduct, and victim or victimless crimes.

Education. References to public elementary, secondary and post-secondary education, including state and federal programs affecting the local school system.

Road Maintenance. References to street construction, widening, repair and completion of roadway projects.

Drainage. References to drainage, sewer and related problems such as standing water, flooding and water in basements.

Fire Protection. References to fire protection services and incidents of fires.

Zoning. References to zoning cases, code enforcement for housing and commercial buildlings, compliance issues and zoning board decisions.

The Environment. References to air, water, noise and other forms of pollution in the Louisville area.

Community Spirit. References to activities or the lack of them that would contribute to community understanding and spirit.

Economic Development. References to unemployment, problems of joblessness and the need to development bisness and and industry in the area.

Courts. References to judge's conduct, courts administration and general activity.

Human Relations. References to minority group and gender discrimination issues and programs to remedy such problems.

The Needy. References to the disadvantaged, handicapped and mentally ill, including related social service programs.

Mass Transit. References to the public bus system or other public transportation in the Louisville area.

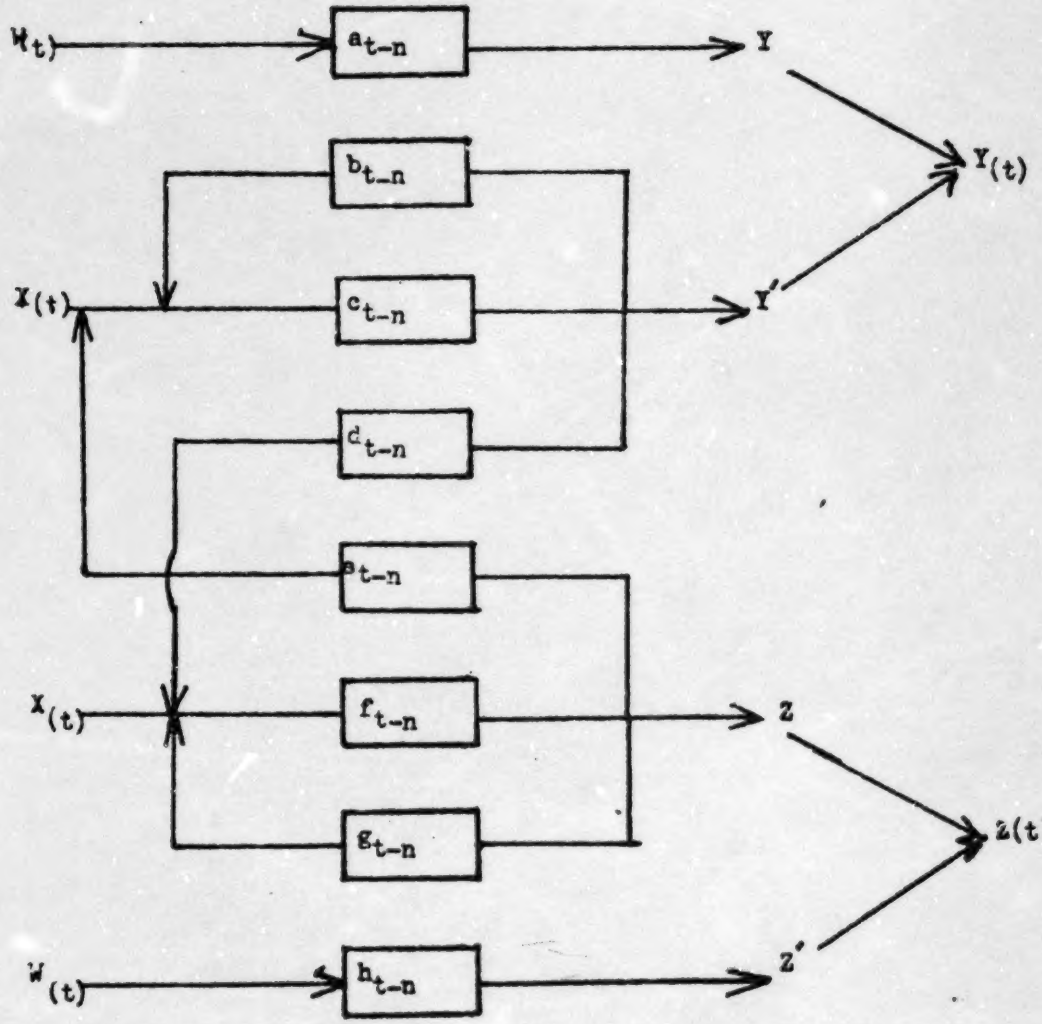
Local Government. References to the efficiency, effectiveness and intentions of local governments, including the performances of government officials.

Taxation. References to all local tax matters.

Other. References to all topics not fitting one of the above categories and nonlocal ones.

FIGURE 1

Speculative Flowgraph of Media, Context, Salience, and Evaluation Variable Relationships[a]




[a]Where: W= Context variables
X= Media variables
Y= Salience variables
Z= Attitudinal variables
a-h= Linear operators
t-n= Lag Lengths

TABLE 1

Aggregated Mentions of Community Issues in the 22 Surveys

| Ranking | Issue[a] | # of Mentions | % of Mentions |
|---|---|---|---|
| 1 | Crime | 3,431 | 20.9 |
| 2 | Education | 3,151 | 19.2 |
| 3 | Road Maintenance | 1,704 | 10.4 |
| 4 | Economic Development | 1,591 | 9.7 |
| 5 | The Environment | 1,138 | 6.9 |
| 6 | Local Government | 970 | 5.9 |
| 7 | Housing | 623 | 3.8 |
| 8 | Public Recreation | 609 | 3.7 |
| 9 | Sanitation | 570 | 3.5 |
| 10 | Drainage | 530 | 3.2 |
| 11 | Mass Transit | 408 | 2.5 |
| 12 | The Needy | 395 | 2.4 |
| 13 | Taxation | 325 | 2.0 |
| 14 | Community Spirit | 314 | 1.9 |
| 15 | Zoning | 209 | 1.3 |
| 16 | Courts | 160 | 1.0 |
| 17 | Human Relations | 158 | 1.0 |
| 18 | Health Care | 95 | .6 |
| 19 | Fire Protection | 41 | .3 |
| | Total | 16,422 | 100% |

[a]The "other" category was excluded from this analysis

TABLE 2
Aggregated Article Count
of Louisville Times Sample
from 1974 - 1981

| Rank[a] | Issue | # of Articles | % of Articles |
|---|---|---|---|
| 1 | Education | 254 | 10.7 |
| 2 | Crime | 154 | 6.5 |
| 3 | Local Government | 90 | 3.8 |
| 4 | Economic Development | 85 | 3.6 |
| 5 | Public Recreation | 68 | 2.9 |
| 6 | Health Care | 64 | 2.7 |
| 7 | The Environment | 55 | 2.3 |
| 8 | The Needy | 38 | 1.6 |
| 9 | Courts | 35 | 1.5 |
| 10 | Community Spirit | 33 | 1.5 |
| 11 | Inflation | 28 | 1.2 |
| 11 | Housing | 28 | 1.2 |
| 13 | Local Elections | 24 | 1.0 |
| 14 | Roads | 20 | .9 |
| 15 | Fire Protection | 19 | .8 |
| 16 | Sanitation | 16 | .7 |
| 17 | Taxation | 14 | .6 |
| 18 | Human Relations | 13 | .6 |
| 18 | Drainage | 13 | .6 |
| 18 | Mass Transit | 13 | .6 |
| 21 | Zoning | 12 | .5 |
| | Other | 1,293 | 54.6 |
| | Total | 2,369 | 100% |

[a]The "other" category was excluded from these rankings. The inflation and local elections categories were added to those taken from the public opinion categories.

TABLE 3

Percent of Ds and Fs Awarded to
Local Government Handling of Seven Issues

| | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 |
|---|---|---|---|---|---|---|---|---|
| Economic Development | 31 | 43 | 46 | 38 | 34 | 53 | 59 | 61 |
| Education | 9 | 21 | 41 | 42 | 38 | 37 | 36 | 32 |
| The Environment | 37 | 44 | 39 | 50 | 57 | 64 | 47 | 44 |
| Crime | 14 | 18 | 15 | 16 | 20 | 18 | 11 | 15 |
| Local Government | 12 | 25 | 28 | 53 | 42 | 60 | 34 | 28 |
| Public Recreation | 11 | 17 | 17 | 20 | 19 | 20 | 20 | 19 |
| Health Care | 7 | 7 | 6 | 7 | 6 | 5 | 5 | 5 |
| N = | 400 | 400 | 430 | 430 | 455 | 455 | 455 | 455 |

TABLE 4
Analysis of Economic Development Time Series
N = 22 Observations

Correlation Analysis[a]

| Lag (Months) | Saliences-Media | Evaluations-Media | Evaluations-Saliences | Saliences-Context | Evaluations-Context | Media-Context |
|---|---|---|---|---|---|---|
| -12 | -.34 | .09 | .63* | .17 | .28 | -.19 |
| - 8 | .38** | -.01 | .67* | .12 | .20 | -.07 |
| - 4 | .09 | -.10 | .69* | -.13 | .11 | -.40** |
| 0 | .04 | .02 | .63* | .16 | .00 | -.29 |
| + 4 | -.04 | .25 | .52* | -.18 | -.22 | -.26 |
| + 8 | .16 | .20 | .33 | -.15 | -.42** | -.33 |
| +12 | -.09 | .20 | .44** | -.02 | -.50* | -.23 |

Regression Analysis[b]

$$Y = .76Z_{t-4} - .43W_{t-4} - .39X_{t-8} - .36X_{t-4} - .34X_{t-12} + .28W_{t-12} + .26Z_{t-8}$$

$R^2 = .754$; $F = 4.828$, 7 and 11 d.f. $p<.01$

$$Z = .75Z_{t-4} - .21W_{t-12} + .11Y_{t-0}$$

$R^2 = .842$; $F = 26.620$; 3 and 15 d.f., $p<.00$

Canonical Analysis[c]

Set 1

| | | |
|---|---|---|
| Evaluation | (t-12) | -.57 |
| Salience | (t-8) | -.56 |
| Evaluation | (t-4) | -.51 |
| Salience | (t-4) | .43 |
| Salience | (t-0) | .42 |

Set 2

| | | |
|---|---|---|
| Context | (t-0) | -.88 |
| Media | (t-8) | -.81 |
| Media | (t-12) | -.81 |
| Media | (t-4) | -.71 |
| Media | (t-0) | -.65 |
| Context | (t-8) | -.57 |
| Context | (t-4) | .34 |

$r_c = .95$

Redundancy Index
Set 1: 14.2%
Set 2: 39.3%

[a] Correlations shown at the negative lags are for the top variable in each column heading leading the bottom variable. Correlations at the positive lags are for the bottom varable in each column heading leading the tope one.

[b] Where Y = saliences; Z = evaluations; X = media coverage; W = context variable; t-n = lag length in months.

TABLE 4 (Cont.)

[c]Only canonical loadings greater than .30 are displayed. The redundancy index was calculated using this formula;

$RI = \frac{\Sigma(Rcc)^2}{M} (Rc^2)$, where Rcc = canonical loadings;

M = the number of variables in the set; and $R_c$ = canonical correlation between two sets.

** $p<.05$
* $p<.01$

TABLE 5
Analysis of Education Time Series
N = 22 Observations

Correlation Analysis[a]

| Lag Months) | Saliences-Media | Evaluations-Media | Evaluations-Saliences | Saliences-Context | Evaluations-Context | Media-Context |
|---|---|---|---|---|---|---|
| -12 | -.14 | -.17 | -.59* | .02 | -.68* | -.13 |
| - 8 | .30 | .04 | -.14 | .15 | -.41** | .39 |
| - 4 | .34 | .19 | .14 | .44** | -.14 | .41** |
| 0 | .39** | .16 | .09 | .70* | .13 | .40** |
| + 4 | .29 | .26 | .51* | .49** | .39** | .38** |
| + 8 | .19 | .35 | .53* | .53* | .43** | .40** |
| +12 | .02 | .36 | .31 | .38** | .31 | .28 |

Regression Analysis[b]

$$Y = .61W_{t-0} - .59Z_{t-12} - .49Y_{t-4} + .47Z_{t-8} + .33W_{t-12}$$

$R^2 = .792$; $F = 9.908$, 5 and 13 d.f., $p < .00$

$$Z = .95Z_{t-4} - .63Y_{t-12} + .46Y_{t-4} - .35X_{t-0} + .32W_{t-12}$$

$R^2 = .756$; $F = 8.080$, 5 and d.f., $p < .00$

Canonical Analysis[c]

Set 1

Evaluation (t-12) -.99
Salience (t-0) -.43

Set 2

Media (t-8) -.67
Context (t-0) .65
Media (t-4) -.49

$r_c = .99$*

Redundancy Index
Set 1: 17.2%
Set 2: 17.1%

[a]See Footnote in Table 4.

[b]See Footnote b in Table 4.

[c]See Footnote c in Table 4.

**p<.05
*p<.01

TABLE 6
Analysis of the Environment Time Series
N = 22 Observations

Correlation Analysis[a]

| Lag (Months) | Saliences-Media | Evaluations-Media | Evaluations-Saliences | Saliences-Context | Evaluations-Context | Media-Contex |
|---|---|---|---|---|---|---|
| -12 | -.08 | .06 | .57* | -.07 | .11 | .24 |
| - 8 | .09 | .31 | .45** | .40** | .00 | -.03 |
| - 4 | .09 | .46** | .33 | -.28 | .01 | -.30 |
| 0 | .38** | .51* | .33 | -.04 | .04 | .28 |
| + 4 | .40** | .43** | .15 | .39** | -.07 | .04 |
| + 8 | -.14 | .16 | -.02 | -.37** | .04 | -.32 |
| +12 | -.02 | -.06 | -.27 | -.04 | .04 | .28 |

Regression Analysis[b]

$$Y = .73Y_{t-12} + .47Z_{t-0} - .26X_{t-12} + .24Z_{t-12} - .22X_{t-8} - .20W_{t-8}$$

$R^2 = .903$; $F = 18.601$, 6 and 12 d.f., $p<.00$

$$Z = -.68Y_{t-12} + .62\ Y_{t-0} + .56Z_{t-4}$$

$R^2 = .830$; $F = 24.424$, 3 and 15 d.f., $p<.00$

Canonical Analysis[c]

Set 1

| | | |
|---|---|---|
| Salience | (t-0) | .99 |
| Salience | (t-8) | -.76 |
| Evaluation | (t-12) | -.74 |
| Salience | (t-4) | .39 |
| Evaluation | (t-0) | -.36 |

Set 2

| | | |
|---|---|---|
| Media | (t-12) | -.61 |
| Context | (t-4) | .56 |

$r_c = .92$

Redundancy Index
Set 1: 27.6%
Set 2: 11.8%

[a]See Footnote in Table 4.

[b]See Footnote in Table 4.

[c]See Footnote in Table 4. The 8- and 12- month lagged values of the environment context variable were dropped from this analysis due to multicollinearity problems.

**p<.05
*p<.01

TABLE 7
Analysis of Crime Time Series
N = 22 Observations

Correlation Analysis[a]

| Lag (Months) | Saliences-Media | Evaluations-Media | Evaluations-Saliences | Saliences-Context | Evaluations-Context | Media-Context |
|---|---|---|---|---|---|---|
| -12 | -.09 | -.45** | -.28 | -.14 | -.07 | .01 |
| - 8 | .04 | -.50* | -.37** | -.44** | -.07 | .03 |
| - 4 | .11 | -.43** | -.27 | -.47** | -.21 | .14 |
| 0 | .37** | -.22 | .18 | -.48** | -.36 | .27 |
| + 4 | .19 | -.01 | .40** | -.56* | -.36 | .17 |
| + 8 | -.08 | .33 | .50* | -.50* | -.38** | .12 |
| +12 | -.20 | .37** | .40** | -.22 | -.52* | -.20 |

Regression Analysis[b]

$$Y = -.92Y_{t-8} - .59W_{t-0} + .57X_{t-0} - .46W_{t-8} + .38Z_{t-0} - .35Y_{t-4} - .34W_{t-4} + .32X_{t-8} - .29Z_{t-12} - .24X_{t-12}$$

$R^2 = .968$; $F = 23.844$, 10 and 8 d.f., $p<.01$

$$Z = .75Z_{t-4} + .41Y_{t-0} + .27X_{t-8}$$

$R^2 = .670$; $F = 10.136$, 3 and 15 d.f., $p<.00$

Canonical Analysis[c]

Set 1

| | | |
|---|---|---|
| Salience | (t-8) | .65 |
| Salience | (t-0) | .58 |
| Salience | (t-4) | .37 |

Set 2

| | | |
|---|---|---|
| Context | (t-0) | -.42 |
| Media | (t-0) | .34 |

$r_c = .99*$

Redundancy Index
Set 1: 12.3%
Set 2: 6.4%

[a]See Footnote a in Table 4.

[b]See Footnote b in Table 4.

[c]See Footnote c in Table 4.

**p<.05
*p<.01

TABLE 8
Analysis of Local Government Time Series

Correlation Analysis[a]

| Lag (Months) | Saliences-Media | Evaluations-Media | Evaluations-Saliences | Saliences-Context | Evaluations-Context | Media-Context |
|---|---|---|---|---|---|---|
| -12 | .14 | .06 | .63* | .56* | .48** | -.36 |
| - 8 | .16 | .15 | .54* | .57* | .3,** | -.01 |
| - 4 | .03 | .01 | .43** | .44** | .43** | .30 |
| 0 | -.01 | .06 | .17 | .48** | .49** | .27 |
| + 4 | .21 | .34 | -.03 | .50* | .33 | .32 |
| + 8 | .15 | .16 | -.16 | .62* | .19 | .38** |
| +12 | .20 | -.26 | -.34 | .68* | .07 | .29 |

Regression Analysis[b]

$$Y = .67Y_{t-4} + .56Y_{t-12} + .41Z_{t-0} + .33X_{t-12} - .31Y_{t-8}$$

$R^2 = .755$; $F = 8.030$, 5 and 13 d.f., $p<.00$

$$Z = .99W_{t-0} - .74W_{t-4} + .73Z_{t-4} - .26Y_{t-4} + .16X_{t-8} - .15Y_{t-12}$$

$R^2 = .897$; $F = 17.370$, 6 and 12 d.f., $p<.00$

Canonical Analysis[c]

| | | |
|---|---|---|
| Set 1 | | |
| Evaluation | (t-0) | .88 |
| Salience | (t-12) | .62 |
| Salience | (t-4) | .50 |
| Salience | (t-0) | -.34 |
| Set 2 | | |
| Context | (t-0) | .99 |

$r_c = .89$

Redundancy Index
Set 1: 15.7%
Set 2: 24.0%

[a]See Footnote a in Table 4.

[b]See Footnote b in Table 4. Lagged values of the government evaluation and context variables were excluded from this analysis due to multicollinearity problems.

[c]See Footnote c in Table 4. Lagged values of the government evaluation and context variables are excluded from this analysis due to multicollinearity problems.

**p<.05
*p<.01

## TABLE 9

**Analysis of Public Recreation Time Series**
**N = 22 Observations**

Correlation Analysis[a]

| Lag (Months) | Saliences-Media | Evaluations-Media | Evaluations-Saliences | Saliences-Context | Evaluations-Context | Media-Contex |
|---|---|---|---|---|---|---|
| -12 | .20 | -.21 | .20 | -.21 | .05 | -.44** |
| - 8 | -.13 | -.26 | .21 | .06 | -.03 | .58* |
| - 4 | -.12 | -.12 | .27 | .09 | .15 | -.24 |
| 0 | .06 | -.24 | .55* | -.14 | .07 | -.29 |
| + 4 | -.12 | -.06 | .60* | .05 | -.14 | .56* |
| + 8 | -.17 | -.07 | .46** | .09 | .07 | -.29 |
| +12 | -.02 | -.19 | .08 | -.14 | .07 | -.21 |

Regression Analysis[b]

$$Y = .82Z_{t=0} - .41Y_{t-8} - .30Y_{t-12} + .17W_{t-4} + .17X_{t-0}$$

$R^2 = .614$; $F = 3.378$, 6 and 12 d.f., $p < .04$

$$Z = .65Z_{t-4} + .40Y_{t-0} + .17X_{t-8} - .17X_{t-0}$$

$R^2 = .902$; $F = 32.233$, 4 and 14 d.f., $p < .00$

Canonical Analysis[c]

| Set 1 | | |
|---|---|---|
| Salience | (t-12) | .62 |
| Salience | (t-4) | .50 |
| Salience | (t-0) | -.34 |

| Set 2 | | |
|---|---|---|
| Media | (t-8) | .94 |
| Media | (t-4) | -.50 |

$r_c = .44$

Redundancy Index
Set 1: 4.8%
Set 2: 4.7%

[a] See Footnote a in Table 4 for an explanation of this analysis.

[b] See Footnote c in Table 4 for an explanation of this analysis. Lagged values of the context variable were excluded from this analysis due to multicollinearity problems.

[c] See footnote c in Table 4 for an explanation of this analysis. T-8 and T-12 of the context variable, T-8 and T-12 values of salience variable, and all lagged values of the evaluation variable were excluded from the analysis due to multicollinearity problems.

**p<.05
*p<.01

TABLE 10

Analysis of Health Care Times Series
N - 22 Observations

Correlation Analysis[a]

| Lag (Months) | Saliences-Media | Evaluations-Media | Evaluations-Saliences | Saliences-Context | Evaluations-Context | Media Context |
|---|---|---|---|---|---|---|
| -12 | .42** | -.27 | -.30 | .24 | -.39** | .36 |
| - 8 | -.57* | .01 | -.24 | .00 | -.22 | .04 |
| - 4 | .17 | -.08 | -.26 | .17 | -.20 | -.35 |
| 0 | -.03 | -.11 | -.13 | .08 | -.02 | .37** |
| + 4 | .23 | -.22 | -.02 | .04 | .12 | .06 |
| + 8 | .13 | .04 | .20 | -.40** | .17 | .09 |
| +12 | -.15 | .03 | -.11 | -.14 | .10 | -.21 |

Regression Analysis[b]

$$Y = -.57W_{t-8} - .37X_{t-12} - .35Z_{t-12} + .30X_{t-4} - .30Y_{t-4} + .25X_{t-8}$$

$R^2 = .566$; $F = 2.607$, 6 and 12 d.f., $p<.07$

$$Z = -.99Y_{t-12} - .86X_{t-4} + .64Z_{t-4} + .45W_{t-4} + .44W_{t-12} - .25Y_{t-8} + .23W_{t-8} - .30Z_{t-12} - .25Y_{t-8} + .23W_{t-8}$$

$R^2 = .783$; $F = 4.507$, 8 and 10 d.f., $p<.02$

Canonical Analysis[c]

Set 1

| | | |
|---|---|---|
| Salience | (t-12) | .80 |
| Evaluation | (t-0) | .58 |
| Salience | (t-8) | .48 |
| Evaluation | (t-12) | .35 |

Set 2

| | | |
|---|---|---|
| Media | (t-4) | -.87 |
| Context | (t-4) | .49 |
| Context | (t-12) | .44 |
| Context | (t-8) | .34 |

$r_c = .95$**

Redundancy Index
Set 1: 16.1%
Set 2: 15.6%

[a]See Footnote a in Table 4.

[b]See Footnote b in Table 4.

[c]See Footnoe c in Table 4.

**p<.05
*p<.01

TABLE 11
Standardized Coefficents From the Regression of Residuals on T-4 Lagged value of Residuals and All Other Variables Included in Each Model.

| | Dependent Variable | |
|---|---|---|
| Series | Salience Residual | Evaluation Residual |
| Economic Development | -.57 | -.22 |
| Education | .20 | .00 |
| Crime | -.55 | -.16 |
| The Environment | .11 | .82* |
| Local Government | .12 | -.37 |
| Public Recreation | .22 | .20 |
| Health Care | -.69 | -.39 |

**p<.05
*p<.01